

SECTION 403 THROUGH 404 - BLANK

SECTION 405
SURFACE TREATMENTS

405.1-DESCRIPTION:

This work shall consist of the construction of a wearing course, composed of bituminous material and aggregate, in one or more applications upon the completed and accepted base course or existing surface, in accordance with these Specifications and in reasonably close conformity with the lines, grades, thicknesses, and cross sections shown on the Plans or established by the Engineer.

The type of surface treatment will be indicated on the Plans.

405.2-MATERIALS:

The materials shall meet the requirements of the following Subsections of Division 700:

| <u>MATERIALS</u> | <u>SUBSECTION</u> | <u>KIND OR GRADATION</u> |
|---|-------------------|---------------------------------------|
| Coarse Aggregate | 703.1-4 | 56, 6, 7, 78, 8 or 9 |
| Liquid Asphalt (Rapid Curing Type) | 705.2 | RC-250 or RC-800 |
| Liquid Asphalt (Medium-Curing Type) | 705.3 | MC-250 or MC-800 |
| Asphalt Emulsion | 705.4 | AEM-2, AEM-3, SS-1, SS-1h, or MS-2 |
| * Cationic Emulsified Asphalt | 705.11 | CMS-1, CSS-2, or CSS-1h |

* May be used with aggregate other than gravel only if the aggregate-asphalt combination meets requirements of ASTM D 1664 for the dry aggregate coating test.

Unless otherwise directed by the Engineer, any of the above types or grades of bituminous material may be used.

CONSTRUCTION METHODS

405.3-WEATHER AND SEASONAL LIMITATIONS:

Weather and seasonal limitations shall be as prescribed in 403.3.

405.4-EQUIPMENT:

Equipment shall be as prescribed in 403.4.

405.5-PREPARING AND REPAIRING EXISTING SURFACE:

This operation shall be performed as prescribed in 401.

405.6-CLEANING AND SWEEPING:

When called for, this work shall be in accordance with 403.5.

405.7-APPLICATION OF BITUMINOUS MATERIAL:

This operation shall be performed as prescribed in 401, except as modified. The bituminous material shall be applied to the prepared surface at the rate specified in 405.12.

Except when required to maintain traffic, surface treatment operations shall be done upon the full width of the section.

New bases shall receive a prime coat as specified in 409 and shall be allowed to thoroughly cure before starting surface treatment operations.

405.8-APPLICATION OF AGGREGATE:

Immediately following each application of bituminous material, aggregate at the rate or rates called for in 405.12 shall be spread with the spreader in such a manner that the entire area being treated is uniformly covered. Trucks spreading aggregate shall be operated so that bituminous material will be covered before the wheels pass over it. Additional aggregate shall be spread if necessary, and hand spreading shall be done to cover areas inaccessible to the spreading equipment. When directed by the Engineer, the aggregate shall be dried or moistened as required.

405.9-BROOMING AND ROLLING:

Immediately following spreading of each layer of aggregate, the entire surface of the aggregate shall be broomed with a broom drag to insure uniform distribution of the aggregate. As soon as the broom dragging operation is completed, the rolling operation shall begin and continue until the aggregate is keyed into the bitumen. If so ordered by the Engineer, rolling shall be continued at proper intervals for several days. Any area that tends to ravel shall be repaired and rerolled. Rolling shall be parallel to the centerline and shall begin at the edges of the treatment and progress toward the center; on superelevated curves, rolling shall begin at the low edge of the curve and continue the entire width of the treatment, each trip uniformly overlapping the preceding trip.

Rolling shall cease before the aggregate is crushed to any appreciable extent. Rollers shall be the type and weight specified in 405.4. The number of rollers shall be sufficient to obtain compaction to the satisfaction of the Engineer. Water, to prevent adhesion of the bituminous material to the roller wheels, shall not be used in excessive amounts. The use of fuel oil, paraffin oil, and

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kerosene on rollers or other equipment, for the purpose of preventing material from picking up or sticking, is prohibited.

405.10-JOINTS:

The longitudinal construction joints between adjacent lanes shall be kept clean of material foreign to the type of surface being treated. The joints shall be constructed without overlaps or gaps between the materials.

The transverse joint at the end of successive sections or lanes shall be covered with paper to prevent overlapping of the bituminous material. Following its use, the paper shall be removed and disposed of satisfactorily.

405.11-PROTECTION OF PAVEMENT AND TRAFFIC CONTROL:

This work shall be done as prescribed in [409.8](#).

405.12-SEQUENCE OF OPERATIONS AND QUANTITIES OF MATERIALS:

The quantities and kinds of materials to be used and the sequence of applications and operations for the various treatments shall be as follows. The quantities shown are the rates per square yard (meter).

Maximum quantities of bituminous material shall be used only when the old surface is open or porous. For blast furnace slag aggregate, 91 percent of the aggregate quantities shown shall be used and the quantity of bituminous material shall be increased to a maximum of 10 percent.

405.12.1-Type A-Light Seal:

- i. Clean and sweep.
- ii. Apply 0.15 to 0.20 gal. (0.7 to 0.9 liters) of bituminous material.
- iii. Spread immediately 8 to 10 lb. (4.4 to 5.5 kg) of # 9 aggregate.
- iv. Broom drag and roll immediately.

405.12.2-Type B-Single Surface Treatment:

- i. Clean and sweep.
- ii. Apply 0.2 to 0.3 gal. (0.9 to 1.4 liters) of bituminous material.
- iii. Spread immediately 10 to 20 lb. (5.5 to 11 kg) of # 8 aggregate.
- iv. Broom drag and roll immediately.

405.12.3-Type C-Double Surface Treatment:

- i. Clean and sweep.
- ii. Apply 0.25 to 0.35 gal. (1.1 to 1.6 liters) of bituminous material.
- iii. Spread immediately 25 lb. (13.5 kg) of # 7, 78, or 8 aggregate.
- iv. Broom drag.
- v. Roll tightly.
- vi. Apply 0.20 to 0.25 gal. (0.9 to 1.1 liters) of bituminous material.
- vii. Spread immediately 10 to 15 lb. (5.5 to 8 kg) of # 8 aggregate (# 9 aggregate if directed by the Engineer.)
- viii. Alternately roll and broom drag.

405.13-METHOD OF MEASUREMENT:

No materials shall be removed from the Project for any purpose until the operation has been completed and the quantities of materials incorporated into the operations have been determined, except when authorized by the Engineer.

The quantities of work done will be measured as follows:

The quantity of "Surface Treatment Aggregate" & "Patching & Leveling Aggregate" shall be measured by the ton (megagram) of material complete in place and accepted.

The number of tons (megagrams) of "Surface Treatment Aggregate" & "Patching & Leveling Aggregate" shall be determined by the total of the weights shown on receipted railroad freight bills with materials are shipped by rail; by actual measured displacement of barges certified by the producer when water shipments are made, providing materials delivered by the methods are not stockpiled or stored; or determined by the Contractor from the total and weigh slips for each vehicle load weighed on an approved standard scale or from digital printout slips from an automatic batching plant, and certified by the Contractor to be correct.

Truck scales shall be provided by the producer or Contractor, except that truck scales are not required where the material is weighed at properly calibrated automatic batching plant facilities which are equipped with digital print-out equipment. The scales shall be of sufficient size and capacity to weigh the heaviest loaded trucks that are used for delivery of the material.

All truck scales shall be mounted on solid foundations which will insure their remaining plumb and level. All truck scales shall be inspected and sealed by the West Virginia Division of Labor, Bureau of Weights and Measures, or other appropriate agencies of the State or its political subdivisions. The Division may, at its option, accept inspection and sealing by out of state agencies when the material is weighed outside West Virginia.

A weigh person shall be provided by the producer. The weigh person shall certify that the weight of the material, as determined either by the truck scales or from the digital printout of the weights, is correct.

Each truck shall be weighed empty prior to each load, except at automatic batch plants approved to operate without truck scales.

A digital recorder shall be required on all truck scales. The digital recorder shall produce a printed record of the gross, tare and net weights, and the time, date, truck identification and project number. Provision shall be made for constant zero compensation and further provision shall be made so that the scales may not be manually manipulated during the printing process. The system shall be interlocked so as to allow printing only when the scale has come to rest. In case of a breakdown of the automatic equipment, the Engineer may permit manual operation for a reasonable time, normally not to exceed 48 hours, while the equipment is being repaired.

The weight of all surface moisture in the aggregate will be deducted from the pay quantity.

The quantity of "Bituminous Material" shall be the number of gallons (liters)

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incorporated into the completed work, which volume will be measured as prescribed in 109.1.

The quantity of "Cleaning and Sweeping" will be measured and paid for as provided in 403. Where a surface treatment is placed upon a base constructed as an item in the same contract, the conditioning and cleaning and sweeping of the base shall be considered as a part of the construction of the base and no additional compensation will be allowed for "Cleaning and Sweeping".

When items for maintaining traffic are included in the Contract, they will be measured and paid as provided in 636.

405.14-BASIS OF PAYMENT:

The quantities, determined as provided above, will be paid for at the contract unit prices bid for the items listed below, which prices and payments shall be full compensation for furnishing all the materials and doing all the work prescribed in a workmanlike and acceptable manner, including all labor, tools, equipment, supplies, and incidentals necessary to complete the work.

405.15-PAY ITEMS:

| ITEM | DESCRIPTION | UNIT |
|----------|-------------------------------------|-------------------|
| 405001-* | SURFACE TREATMENT AGGREGATE, ** | TON (MEGAGRAM) |
| 405002-* | PATCHING AND LEVELING AGGREGATE, ** | TON (MEGAGRAM) |
| 405003-* | BITUMINOUS MATERIAL | GALLON (LITER) |

* Sequence number

** Type of Aggregate

406 through 407 - BLANK

**SECTION 408
TACK COAT**

408.1-DESCRIPTION:

This work shall consist of preparing and treating an existing bituminous or concrete surface with bituminous material, and cover aggregate when called for on the Plans, in accordance with these Specifications and in reasonably close conformity with the lines shown on the Plans or established by the Engineer.

408.2-MATERIALS:

Materials shall meet the requirements of the following Subsections of Division 700: